coating was exposed to a long wavelength UV light for ten seconds to cure the coating. The coating became solid. The sample was annealed at 100° C. and cooled. The annealed sample was irradiated with 500 rads of 100 KeV X-ray. The coating developed blue color.

Example 37

Elimination of Color Reference Chart

A rectangular piece of element of diacetylene-4BCMU of example 21 mounted on a piece of paper was exposed to 254 nm UV light through circular mask for different period in a series of exposures. Circular dots of increasing intensities were obtained (FIG. **22***a*). The rest of the element was unexposed. The whole element was then exposed to 254 nm UV light for different period of time and the element was photographed (FIG. **22***b* through **22***g*). As the exposure of the whole element increased, the pre-exposed dots started disappearing as shown in FIGS. **22***b* through **22***g*.

A similar results were obtained when similar element was exposed 50 through 10,000 rads of 100 keV X-ray.

The results indicate that numbers are printed instead of the dots with a UV lamp or a UV laser, with exposure proportional to the dose of X-ray to be monitored, the numbers will disappear. The dose can be read from the lowest readable number. Instead of printing the numbers with UV light, the numbers of varying color intensity proportional to the dose can be printed with the same color ink on a substrate and the diacetylene formulation can be coated on it. This type of dosimeter will be a kind of self reading dosimeter and would not need a color reference chart. This type of dosimeter could be smaller in size. The number can also be printed with diacetylene ink.

Example 38

False Positive Indicators

A 2% solution of pentamethoxytriphenylmethanol (PTM) in polyvinylchloride solution in tetrahydrofuran was coated on polyester using #30 wire wound rod and dried in an oven at 60° C. This formulation is sensitive to both time-temperature (FIG. **27***b*) and UV (FIG. **27***a*). This formulation does not develop any noticeable color at least up to 10,000 rads of X-ray. However, when exposed to UV/sunlight it changes from colorless to red color (FIG. **27***a*). The formulation also develops color with time and temperature of storage (FIG. **27***b*). At a lower temperature it takes longer time to develop the same color. The time required for the color development due to exposure to UV/sun light and temperature for this formulation was varied by adding heat stabilizers, such as organo metallic compounds, such those of tin, zinc, and barium and bases, such as triethylamine. Hence, this formulation can be used for monitoring shelf-life and UV exposure of the dosimeter.

Example 39

A commercially available antistat source (which is polonium 210, 200 microcuries, as shown in bottom portion of FIG. **29**) was placed on sensor film of 4BCMU made according to Example 21. The source was removed after 5 minutes. The sensor showed an image of the source in blue color. Partially polymerized 4BCMU is blue. Alpha particles emitted by the source initiated polymerization of 4BMCU and created an image of the source.

The present invention has been described with emphasis on the preferred embodiments without limitation to the breadth of the invention which is more specifically set forth in the claims appended hereto.

The invention claimed is:

1. A radiation monitoring device comprising:

a substrate; and

a sensor comprising at least one radiation sensitive material having capability of developing detectable color change when exposed to ionizing radiation having energy higher that 5 eV, wherein a portion of the sensor is covered with an opaque material to detect tampering with UV or sunlight.

2. The radiation monitoring device of claim **1** wherein said opaque protective material has an adhesive layer.

3. The radiation monitoring device of claim **1** wherein the protective layer is a metal layer.

4. The radiation monitoring device of claim **1** wherein the protective layer is a metallized tape.

5. A process for monitoring tampering with a sensor by exposure to UV or sunlight comprising the steps of:

partially covering the sensor with an opaque material;

exposing the sensor to UV or sunlight; and

removing the opaque material and monitoring a difference in optical density between covered and uncovered area of the sensor.

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